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Aquaculture White Paper & Strategic Plan

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Massachusetts Coastal Zone Management



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Aquaculture White Paper & Strategic Plan



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ACKNOWLEDGEMENTS

The Aquaculture White Paper and Strategic Plan are the result of the concerted effort of the Aquaculture Steering Committee led by Leo Pierre Roy, Undersecretary of Environmental Affairs; The Economic Development and Marketing Working Group chaired by Dr. Priscilla Brooks of the Conservation Law Foundation, Jay Healy, Commissioner of Food and Agriculture and Lisa Standish of the Mass. Office of Business Development; The Regulatory Reform Working Group chaired by Bob Golledge Acting Deputy Director of Wetlands and Waterways, DEP and Susan Snow-Cotter, MCZM; and The Environmental Review Working Group which was chaired by Jim Fair, Assistant Director of DMF and Dr. Harlyn Halverson of U-Mass/Dartmouth. The individual members of these groups are listed in Appendix G.

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While the planning and preparation of this report was a coordinated effort in every sense, the following key staff members were responsible for individual components of the document:

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Aquaculture Strategic Plan

EXECUTIVE SUMMARY

Why Develop a Plan for Aquaculture in Massachusetts?

Aquaculture offers tremendous opportunities for the Commonwealth of Massachusetts, especially during a time when the state's fishing industry has been so hard hit by reductions in groundfish stocks. This growth industry can provide jobs that are much needed in the seafood sector of the economy. In addition, aquaculture represents a sustainable economic use of our coastal resources -- which means that aquaculture activities can be continued into the future, providing economic opportunity without depleting non-renewable resources.

With our wealth of diverse marine and freshwater resources, world class research institutions, concentration of marine technology firms, and strategic location to serve one of the world's largest seafood markets, Massachusetts is a natural place for extensive aquaculture. Up to this time, however, the full opportunities provided by aquaculture have not been seized upon, largely due to a number of regulatory barriers. Now is the time to develop a plan to remove these regulatory barriers so that the future of aquaculture in the Commonwealth can be secured.

The Aquaculture Strategic Plan explains where we are now and where we are going with aquaculture in Massachusetts. It is the tool that is needed to form a framework to support aquacultural activity, both private and public, and to encourage the growth of this industry during a critical stage of development.

Who Developed the Plan?

The plan was developed by three working groups: the Environmental Review Working Group, the Regulatory Reform Working Group, and Economic Development Working Group. These working groups were brought together by the Secretary of the Executive Office of Environmental Affairs, Trudy Coxe, at the request of Governor William F. Weld. These groups are made up of specialists in different aspects of aquaculture and resource management and have been overseen by an Aquaculture Steering Committee, led by Undersecretary of Environmental Affairs Leo Pierre Roy.

When Will the Recommendations Be Implemented?

The Aquaculture Strategic Plan has a five year horizon, concluding in the year 2000. The Plan proposes a series of both short and long-term recommendations. The short-term actions will not require any changes in legislation or regulations and

include projects that can be implemented utilizing existing or reprogrammed resources. Many of these short-term recommendations also require no funding, only redirected staff attention or policy change. The long-term recommendations require either legislative action, regulatory change, or significant financial appropriations. Now is the time, however, to begin the process so that these recommendations can be implemented by the turn of the century.

What Does the Plan Include?

The Aquaculture Strategic Plan includes 68 specific recommendations for the State to implement to overcome existing constraints and take advantage of opportunities in the aquaculture industry. Of these 68 recommendations, the following were identified as priorities for action:

- Initiate regulatory streamlining recommendations.
- Establish an interagency Aquaculture Coordination Team (ACT) to oversee implementation of Strategic Plan and to guide State aquaculture activities.
- Establish an Aquaculture Coordinator position to serve as a single point of entry for all existing and prospective aquaculturists. The Coordinator will lead ACT and provide the link between all State agency activities relating to aquaculture, both regulatory and promotional. Additionally, the Coordinator will be charged with spearheading the implementation of this Plan.
- Establish a broad-based Aquaculture Advisory Group to advise ACT on issues of concern.
- Direct all aquaculture related bond appropriations toward priorities identified in the Strategic Plan.
- Work with municipal officials, the Department of Marine Fisheries, and shellfish aquaculturists to improve and standardize the administration of shellfish licenses to improve the prospects for obtaining financing for aquaculture ventures.

These and the other recommendations are explained in detail throughout the plan, which is broken down into the following chapters:

- Chapter 1 defines aquaculture, characterizes the size and potential for the industry in Massachusetts, and justifies why the State should actively encourage aquaculture.

- Chapter 2 outlines the priority overarching recommendations of the Plan and includes the proposed agency framework.
- Chapter 3 summarizes specific steps to streamline aquaculture permitting.
- Chapter 4 includes the recommendations for promoting the economic development of aquaculture.
- Chapter 5 details a recommended approach for siting and monitoring the environmental impacts resulting from aquaculture.
- Chapter 6 summarizes the report and lists all the recommendations.
- A glossary which includes all acronyms utilized in report is found on page 63.

Chapter I

INTRODUCTION

What is Aquaculture?

On a technical level, aquaculture is defined as "the manipulation of marine or freshwater organisms and/or their environment before eventual release, harvest, or capture; the controlled cultivation and harvest of aquatic animals and plants" (USDA National Aquaculture Development Plan, 1983). On the popular level, however, aquaculture is sometimes referred to as "fish farming." For the purposes of this Strategic Plan, the term "aquaculture" will include all aspects of the technical definition and will discuss the industry and science as a whole.

"Marine aquaculture" or "inland aquaculture" will be used to differentiate between the location and nature of the type of aquaculture. "Marine aquaculture" includes structures (trays, pens, enclosures, nets, etc.) that are located in or on unaltered marine waters. "Inland aquaculture" includes facilities on land including, in some cases, freshwater wetlands. Inland aquaculture utilizes ponds, tanks, and enclosures that are dependent upon the culturist for maintenance of water quality, food supply, and waste removal. Certain facilities and culturing technologies that do not fit squarely within either category will be identified throughout this Plan. Examples of aquaculture that involves both inland and marine components are: the culture of anadromous and catadromous species, hatcheries, and recirculating systems that withdraw from and discharge into marine waters.

When the term "aquaculture" is used in this Plan it includes both public and private operations. There is widespread interest in the Commonwealth in both privately owned and operated aquaculture activities, as well as enhancement and propagation efforts that will augment recreational and commercial harvests. In addition, this Plan advocates public/private aquaculture partnerships.

What Is the Purpose of the Aquaculture Strategic Plan?

The economic realities of the fisheries declines coupled with the economic opportunities associated with increased demand for fish and fish products means that the interest in aquaculture is growing rapidly. While many other states and nations have taken steps to support aquaculture in their jurisdictions, Massachusetts has lagged behind. Currently, there are a myriad of regulatory and legal impediments to the development of a successful aquaculture industry in the Commonwealth. Now is the time, therefore, to break down these barriers and ensure that aquaculture can be effectively pursued in this state.

The Aquaculture Strategic Planning process marks the first coordinated effort to support aquaculture in Massachusetts. The Strategic Plan represents the foundation for addressing the complex, multifaceted issues associated with aquaculture and removing unnecessary impediments to the aquaculture industry. This effort represents a five year planning process and will build a long-term structure for aquaculture development. The Strategic Plan is not intended to "solve" all aquaculture related issues now, but rather it is designed to chart a course for identifying key issues and solving problems in a cooperative and comprehensive manner.

What Is the Aquaculture Strategic Planning Approach?

In December of 1994, Governor William F. Weld requested that the Executive Office of Environmental Affairs (EOEA) initiate a strategic planning process to investigate the potential for aquaculture in Massachusetts and determine why the Commonwealth lags so far behind many of our neighboring states in this industry. Governor Weld further directed EOEA to put together broad-based, but focussed, Working Groups to craft recommendations on how the State can overcome some of the constraints that aquaculture faces in Massachusetts.

In response to the Governor's request, Secretary Trudy Coxe organized three Working Groups: the Regulatory Reform Working Group, the Environmental Review Working Group, and Economic Development Working Group. These groups met regularly for the first half of 1995 and initiated a strategic planning process, which included site visits to aquaculture facilities, discussions with industry and potential aquaculturists, international literature reviews, four regional public meetings, and over 40 working meetings. The recommendations developed by the Working Groups are found in Chapters 2, 3, 4 and 5.

To provide oversight and direction to the Working Groups, a broad based Aquaculture Steering Committee comprised of representatives from private industry, academia, government, the Legislature, and the restaurant trade was formed. The Steering Committee met monthly with the Chairs of the Working Groups.

Aquaculture Projections

If the recommendations included in this Plan are successfully implemented, it is projected that by the year 2000 Massachusetts could realize¹:

- *An increase in marine acreage under commercial shellfish cultivation from 645 acres (1994) to 1600 acres.*
- *An increase in full and part-time aquaculture jobs from 131 today to 740.*
- *An increase in farm gate value of shellfish from approximately \$4 million (Bush and Anderson, 1992) to \$27 million.*
- *An increase in farm gate value of finfish produced in inland facilities from approximately \$4 million (Bush and Anderson, 1992) to \$16 million.*
- *An increase in farm gate value of shellfish and finfish produced in offshore facilities from zero today to \$2 million.*
- *A total farm gate production increase from \$8 million (NRAC, 1992) to \$45 million.*

What Is the Status of the Aquaculture Industry in Massachusetts?

Managed cultivation of shellfish and crustaceans in Massachusetts originated with the native Americans and was adopted by the early settlers on Cape Cod. It was not until the 1970's and 1980's, however, that efficient and viable hatchery and grow-out techniques were proven effective on a larger, commercial scale.

Today, aquaculture in Massachusetts is estimated to be about an \$8 million dollar industry (Bush and Anderson, 1993). The industry is roughly split between inland and marine aquaculture in terms of economic value. The inland industry is comprised primarily of a handful of highly technical recirculating facilities located primarily in the western part of the state (with one on Cape Cod). These facilities produce hybrid striped bass, tilapia, trout, and other finfish. The marine aquaculture industry in Massachusetts mainly produces quahogs (hard clams) and oysters, with small quantities of scallops, soft shell clams, and mussels. The marine

¹ Assumptions: 20% increase per year in shellfish leases over the course of planning period (five years). An estimated production value of \$30,000/acre for the most efficient, well-managed operations (640 acres or 40% of leased areas) and a lower average of \$8,000/acre for the remaining operators (960 acres or 60% of leased acres). The employment numbers were generated utilizing data compiled by NRAC on employment and production in the Northeast Region. Total estimated employment for both full and part time employees in the NE region (2,400) was divided by the total regional production (\$146,409,000) and resulted in an estimated \$61,004/employee. \$61,004 was then divided into the total Massachusetts production for the year 1992 (\$8,000,000) and into the projected 2000 production (\$45,000,000) to result in an estimated 131 jobs today and 740 jobs in the year 2000.

aquaculture industry is concentrated on Cape Cod and the Islands with some producers on the South and Southeastern Shores.

Put in perspective, the Massachusetts aquaculture industry is small. Worldwide Total Aquaculture Production in 1992 is estimated to be \$32.5 billion (FAO, 1995). The U.S. Total Aquaculture Production in 1993 was over \$810 million (NMFS, 1995). In the Northeast Region in 1992, Massachusetts was the fifth largest aquaculture producing state after Connecticut (\$61.7 million), Maine (\$42.9 million), Pennsylvania (\$11.9 million), and New York (\$9.6 million) (NRAC, 1993).

What Is the Potential for Aquaculture in Massachusetts?

Without a doubt, Massachusetts enjoys a competitive advantage for aquaculture in terms of access to fresh and marine waters, excellent port and processing facilities, world class research institutions, a highly educated work force, and established markets and distributions links. Despite the factors that inhibit aquaculture in the state (i.e., a highly developed coastline, multiple competing uses of the coast, a redundant regulatory system, legal issues, and a misunderstanding of aquaculture by the public and the fishing industry) our state clearly has the potential to support a thriving aquaculture industry.

The potential for aquaculture to expand in the Commonwealth is dependent on several considerations. This Plan is meant to overcome some of the anthropogenic constraints, such as regulatory framework, business climate, public acceptability, and user conflicts. Other, more environmental constraints, such as tidal range, exposure, biological parameters, flushing rates, and temperature are not easily overcome. On balance, however, Massachusetts has the potential to weigh in as an extremely competitive location for aquacultural activity.

Why Should the State Support this Industry?

Fish, fishing, and fishermen are deeply rooted in Massachusetts' history and traditions. In fact, when the settlers came to Massachusetts, our eastern-most shores were named Cape Cod because of the abundance of fish. Today, however, many of our traditional groundfish stocks have been severely depleted. Aquaculture is a means to continue our fishing traditions in the face of declining wild fish stocks. The harvesting of wild stocks can not be sustained at the levels experienced in recent decades. Aquaculture can be used to augment the wild harvest, which will undoubtedly be fished at lower intensities than in the past.

When sited and managed properly, aquaculture is an environmentally compatible industry that requires consistently high water quality. By encouraging aquaculture, the Commonwealth can enjoy a diversified economy in areas of limited year-round employment while ensuring the protection of a critical resource -- water quality.

The success of aquaculture is, in many ways, dependent on enhanced and sustained water quality. It is essential that local, state and federal resources continue to be mobilized at controlling both point and non-point sources of pollution.

Aquaculture in its many manifestations offers jobs ranging from the highly technical to the basic and supports numerous spin-off and support industries. The aquaculture industry and the jobs it creates are also sustainable, which means that aquaculture activities, if implemented using good husbandry practices, can be carried on indefinitely. Aquaculture products can also assist in diversifying the fresh fish available to consumers, wholesalers and retail markets.

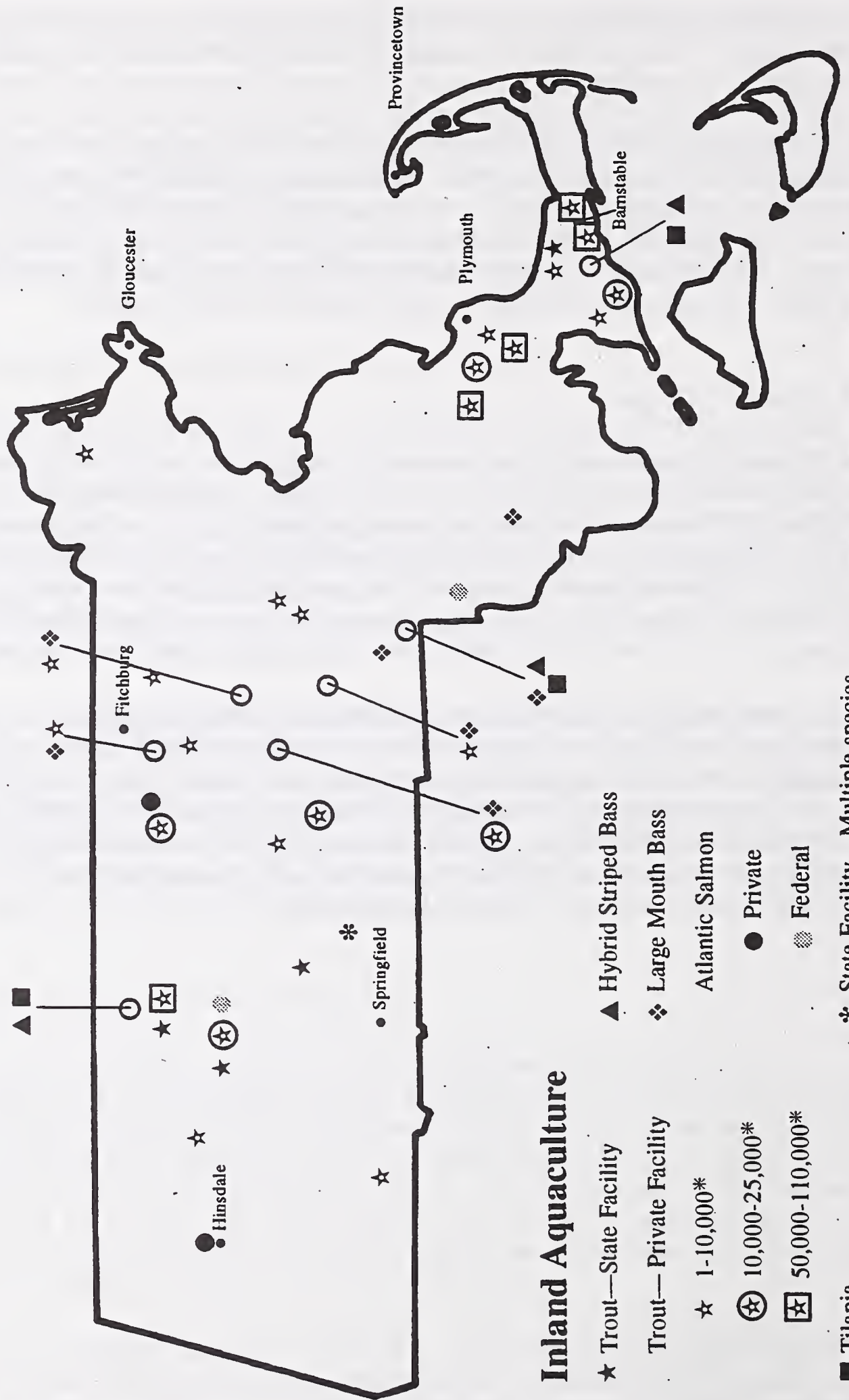
The Need for Balance

The Commonwealth recognizes the need to support aquaculture in a manner that is compatible with the other existing uses of Massachusetts' waters and uplands. Specifically, diverse needs (such as private property rights, public access, the wild fishery, navigation, and recreation) that aquaculture will compete with must be analyzed. Without question, aquaculture must be balanced with other compatible activities. A balance can be struck, however, because all these activities have much in common -- and most importantly, they all require sustained high water quality.

Rather than being a divisive issue, aquaculture in Massachusetts can function as an opportunity to galvanize disparate interests to work toward common goals including: diversified, sustainable economies for isolated rural areas, both inland and marine; remediation of contaminated areas; improved viability of non-productive areas; minimized upland sources of point and nonpoint pollution; and education of our children on the value of a healthy ecosystem that can support renewable natural resource-based food production.

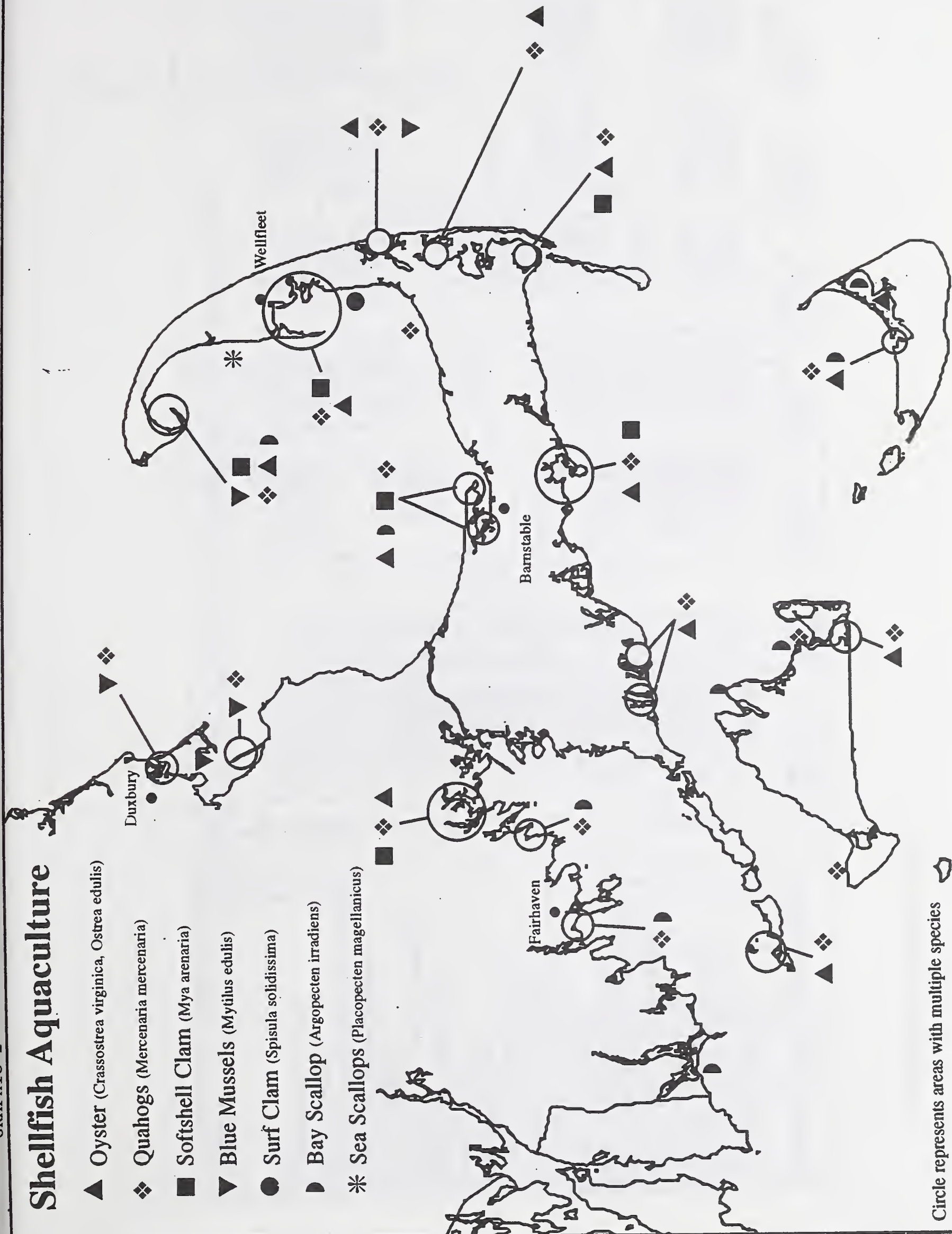
Graphic 1

Inland Aquaculture



Shellfish Aquaculture

- ▲ Oyster (*Crassostrea virginica*, *Ostrea edulis*)
- ◆ Quahogs (*Mercenaria mercenaria*)
- Softshell Clam (*Mya arenaria*)
- ▼ Blue Mussels (*Mytilus edulis*)
- Surf Clam (*Spisula solidissima*)
- ◐ Bay Scallop (*Argopecten irradians*)
- * Sea Scallops (*Placopecten magellanicus*)

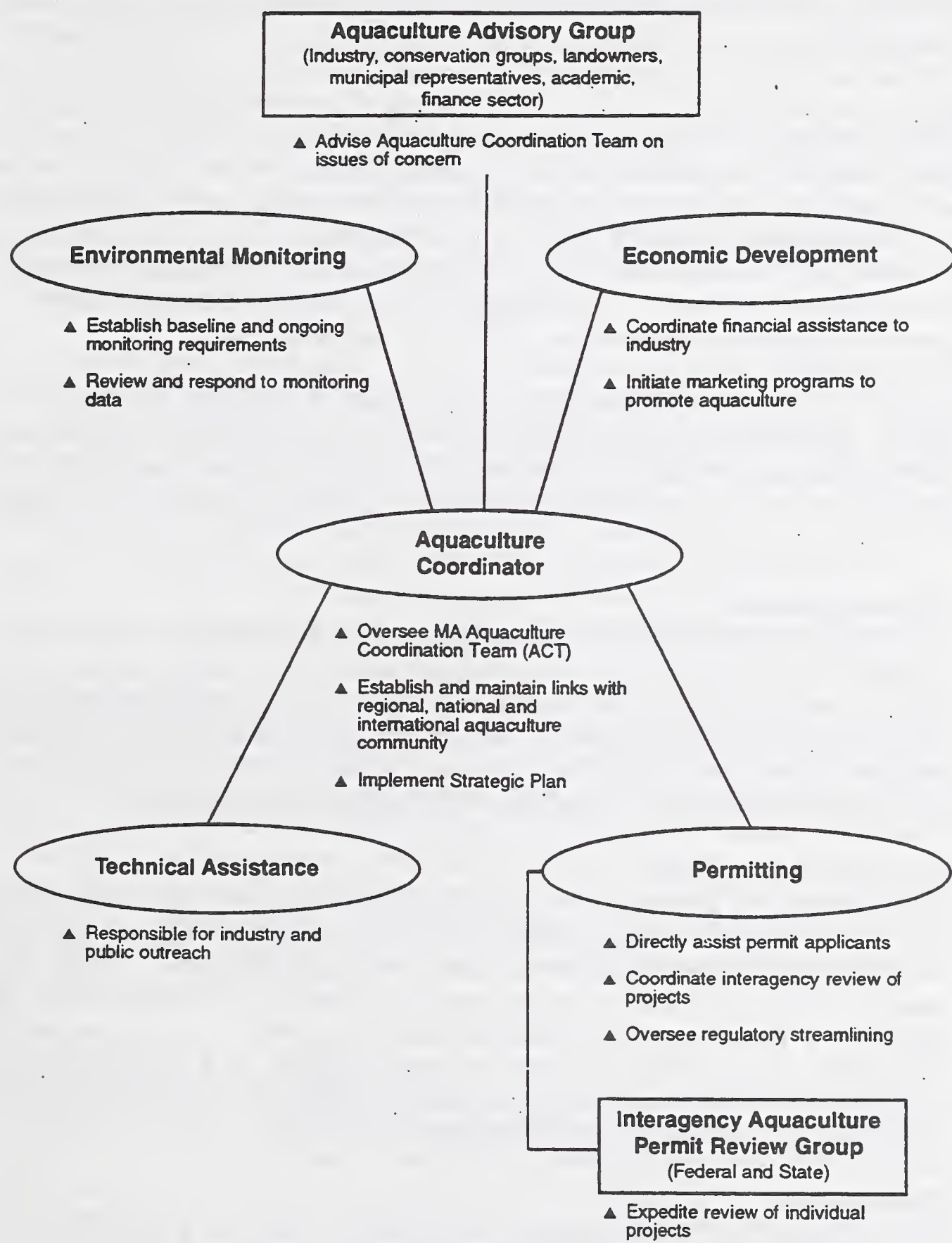


Circle represents areas with multiple species

RECOMMENDED FUNDING LEVELS

Programs (Listed in order of priority)	Five Year Funding Level	Starting Year	Fiscal				Fiscal			
			Year '96	Year '97	Year '98	Year '99	Year '98	Year '99	Year 2000	Fiscal
Aquaculture Coordinator	\$250,000	FY '96	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	
DMF Aquaculture Specialist	\$250,000	FY '96	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	
Municipal Propagation Grants	\$2,000,000	FY '96	\$400,000	\$400,000	\$400,000	\$400,000	\$400,000	\$400,000	\$400,000	
Revolving Loan Fund*	\$1,000,000	FY '96	\$500,000	\$500,000						
Seafood Expo & Other Festivals	\$100,000	FY '96	\$20,000	\$40,000	\$40,000					
High School/Vo-Tech Program	\$150,000	FY '96	\$75,000	\$75,000						
Research and Development	\$2,015,000	FY '96	\$500,000	\$500,000	\$400,000	\$400,000	\$400,000	\$400,000	\$315,000	
Extension Agents (2)	\$400,000	FY '97		\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	
Research & Innovation Center	\$150,000	FY '96	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	
Consumer P.R. Campaign	\$50,000	FY '98			\$50,000					
Grower Marketing Seminars	\$10,000	FY '98			\$5,000	\$5,000				
Mass Grown Seal**	\$5,000	FY '97		\$5,000						
Buyer's Guide**	\$5,000	FY '97		\$5,000						
Publish New State Policy	\$5,000	FY '96	\$5,000							
Economic Development Seminars	\$10,000	FY '96	\$5,000	\$5,000						
Industry Survey	\$50,000	FY '96	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	
Univ./State College Program	\$1,500,000	FY '97		\$750,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	
Public/Private Enhancement Program	\$500,000	FY '97		\$75,000	\$100,000	\$125,000	\$125,000	\$125,000	\$200,000	
Public Education	\$500,000	FY '96	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	
Demonstration Centers	\$1,750,000	FY '96	\$50,000	\$950,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	
TOTAL	\$10,800,000		\$1,795,000	\$3,645,000	\$1,835,000	\$1,770,000	\$1,770,000	\$1,770,000	\$1,755,000	
* Revolving loan fund will start with \$1,000,000 in initial investment over two years and will be self sustaining thereafter.										
** Funding could be added into current DFA programs										

Proposed Aquaculture Framework



Chapter II

PRIORITY RECOMMENDATIONS

The following recommendations reinforce recommendations made by several of the Working Groups and reflect the priority actions needed to "jump start" the aquaculture industry in Massachusetts. The first six recommendations should be considered overarching, in that they address issues which are fundamental to coordinated support for aquaculture. The priority recommendations should not take away from the importance of the recommendations found in the individual chapters. In many cases, the implementation of the specific recommendations dealing with regulatory reform, economic development and environmental review hinge on the prior implementation of the recommendations presented below. Recommendation numbers 7 - 13 address the administrative requirements necessary to support an aquaculture industry at the state level.

Note: A (\$) next to a recommendation indicates that a new appropriation is necessary to implement the recommendation. If no (\$) is noted, it can be assumed that the recommendation can be implemented utilizing existing staff and resources. A spreadsheet of all recommendations requiring funding is provided in Graphic 3.

1. *Recommendation:*

Regulatory streamlining recommendations found in Chapter 2 should be implemented immediately. Standardized aquaculture applications which include detailed information needs and standard plan requirements should be coordinated as soon as possible. Regulatory streamlining and coordinated processing are central to the development of aquaculture. Each general type of aquaculture should require only one coordinated application.

2. *Recommendation: (\$)*

In recognition of the multiple benefits of public aquaculture, the Municipal Shellfish Propagation program should be reactivated and improved. Funds should be appropriated to DMF to fund this popular program. Guidance to municipalities must ensure that propagation funds are used effectively and for appropriate purposes. Consideration should be given to incorporating the restoration of contaminated areas into this program. It is recommended that this program be administered as a matching grant program whereby the state would match town propagation budgets.

Justification:

This program had significant local support and is seen as a means for developing local support for aquaculture, both private and public. By enhancing and managing productive public shellfish beds, the recreational and commercial shellfish harvesters may not be so opposed to some privatization.

Other advantages of public aquaculture include the fostering of the public's understanding of aquaculture and the creation of opportunities for experimentation in propagation and harvesting techniques. Additional incentives for the towns to support aquaculture can be created by allowing them to use the proceeds of increased aquaculture license fees to increase the size of state match.

3. *Recommendation: (\$)*

Aquaculture staff within state and municipal government is critical to the growth of aquaculture in Massachusetts. Presently, there is virtually no full time staff in State government responsible for any aspect of aquaculture regulation or economic development. At minimum, an Aquaculture Coordinator at DFA and an Aquaculture Specialist within DFWELE are necessary to meet existing and backlogged needs.

The Aquaculture Coordinator would oversee the ACT, establish and maintain links with the regional, national and international aquaculture communities and would be responsible for implementation of the Strategic Plan. Most importantly, the Coordinator will serve as the single point of contact within the State for all existing and prospective aquaculturists. The Coordinator will actively assist all aquaculturists in identifying and complying with appropriate regulatory requirements. The Aquaculture Specialist within DFWELE is necessary to coordinate the streamlining of the regulatory review process as well as carry out required field survey and monitoring responsibilities.

4. *Recommendation:*

Any State bond monies appropriated for aquaculture purposes should be directed toward priorities identified in this Strategy. Specifically, funding for aquaculture related projects is included in the proposed Open Space Bond Bill (HB no. 5143), Seaport Bond Bill (HB no. 5127) and the Coastal Assessment Bill (SB no. 1834). Aquaculture should be included in the section of the Open Space Bond Bill known as "Linked Investment for Agriculture" which would allow state funds to be invested at lower than market rates in selected financial institutions. The savings to the financial institution could then be passed on the loan recipient.

5. *Recommendation:*

A priority of the aquaculture industry is to improve Shellfish Licensing terms to provide for more predictability and stability of licensing in an effort to improve financing potential. The existing licensing process varies significantly from town to town and leaves room for much discretion. It is recommended that a series of meetings be organized with shellfish aquaculturists, municipal licensing bodies (selectmen), shellfish constables and DMF to discuss potential changes to DMF regulations as well as municipal license administration.

6. *Recommendation: (\$)*

The state should produce a user friendly "Aquaculture Regulatory Handbook" which is easily updated. This Handbook should detail the permit requirements, review time frames, jurisdictional authorities, application fees, agency contact person, necessary application materials, and review processes for the different types of aquaculture. This handbook should be geared toward prospective aquaculturists, the finance community, and other interested parties. A related longer term recommendation is to provide this regulatory handbook in CD-Rom format.

Agency Responsibilities

7. *Recommendation:*

An Aquaculture Coordination Team (ACT) comprised of (existing) State agency staff with expertise and responsibility for technical assistance, environmental monitoring, economic development and permitting should be established. ACT will be responsible for policy development, industry support, oversight of regulatory streamlining, and implementation of the Strategic Plan. An Aquaculture Coordinator, located at DFA should be hired to coordinate the work of ACT. The Strategic Planning process has highlighted the need for sustained inter-agency coordination and ACT would serve that purpose. An Aquaculture Advisory Group would advise ACT. Refer to Graphic 4 depicting the proposed Aquaculture Framework.

8. *Recommendation:*

An Aquaculture Advisory Group which includes representation from a broad spectrum of interests including industry, conservation groups, the financial sector, landowners, municipal representatives, and academia should be established. The Aquaculture Advisory Group would advise and guide the ACT on issues of concern. The Aquaculture Coordinator would be the liaison between ACT and the Advisory Group. This group could also establish research grant criteria and review procedures for state aquaculture research and development grant programs.

Justification:

State aquaculture development and management activities should be coordinated with members of the various sectors involved to assure that policy decisions and appropriations are efficiently carried out and relevant to industry development.

9. *Recommendation: (\$)*

A position should be established at DFA for an Aquaculture Coordinator. The Aquaculture Coordinator should be responsible for coordination of all state aquaculture activities, would oversee the work of the Aquaculture

Coordination Team (ACT) and be responsible for the implementation of the Strategic Plan.

10. *Recommendation:*

DMF should be the lead regulatory agency for marine aquaculture and hatcheries. DMF should be responsible for developing and administering a "one-stop" permit process which incorporates the concerns and timely review of all other relevant agencies, both state and federal.

11. *Recommendation:*

DFW should be the lead regulatory agency for inland aquaculture and hatcheries. DFW should be responsible for developing and administering a "one-stop" permit process which incorporates the concerns and timely review of all other relevant agencies, both state and federal.

12. *Recommendation:*

DFA shall be the lead agency for the promotion and marketing of aquacultured products. To the extent possible, all existing DFA promotion and marketing programs should be extended to include aquaculture.

13. *Recommendation:*

Establish an Interagency Aquaculture Permit Review Group. This group would meet as needed to discuss aquaculture proposals presently under state review. In an ongoing attempt to streamline the regulatory framework for aquaculture, this Review Group would have representation from federal and state agencies. The coordination of this group would be the responsibility of the Permitting representative who sits on the ACT.

Justification:

The value of interagency coordination has become apparent through the Strategic Planning process. Aquaculture, by the nature of the science and industry, does not fit squarely within any existing agency in the state. Not desiring to add another bureaucratic agency, it is recommended that the Interagency Aquaculture Permit Review Group meet on an as needed basis.



Massachusetts Coastal Zone Management

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Argeo Paul Cellucci, Lieutenant Governor

Executive Office of Environmental Affairs

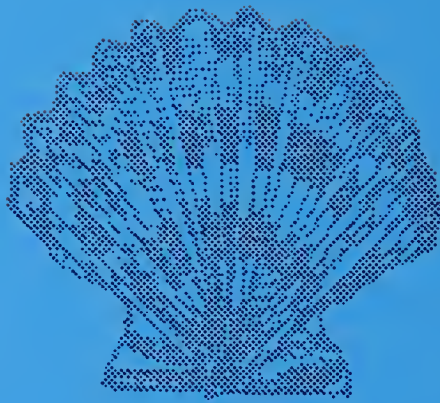
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